Defence Research and Development Canada
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Major Events Coordinated Security Solutions

The Application of the Project Management Body of Knowledge for Managing a Science and Technology Project

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Technical Note
DRDC CSS TN 2011-03
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Canada

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The Major Events Coordinated Security Solutions (MECSS) project, project number 33bd, was a project under the Public Security Technical Program (PSTP), managed by the DRDC Centre for Security Science (CSS)

Abstract

The Major Events Coordinated Security Solutions (MECSS) project was put in place to support the application of science and technology to reduce the security risk related to the Vancouver 2010 Winter Olympics and Paralympics as well as the G8/G20 Summits. At the direction of the Assistant Deputy Minister Science and Technology, the MECSS project was to be managed in the same manner as Technology Demonstration Projects using project management best practices. This report outlines the project management elements that were used to manage the MECSS project and specifically outlines the value of applying the Project Management Institute's Project Management Body of Knowledge to a science and technology project focusing on support to a domestic security event.

Résumé

Le projet Solutions concertées pour la sécurité des grands événements (SCSGE) a été mis en place afin de soutenir l'utilisation de la science et de la technologie en vue d'atténuer les risques pour la sécurité des Jeux olympiques et paralympiques de Vancouver 2010 et des sommets du G8 et du G20. Les meilleures pratiques en matière de gestion de projet devaient servir à gérer, sous la direction du Sous-ministre adjoint (Science et technologie), le projet SCSGE de la même façon que les projets de démonstration de technologies. Ce rapport donne un aperçu des éléments de gestion de projet ayant été utilisés pour le projet SCSGE et il souligne tout particulièrement l'importance de l'ensemble des connaissances en gestion de projet du Project Management Institute dans le cadre d'un projet de science et technologie visant à appuyer un événement de sécurité nationale.

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Executive summary

Major Events Coordinated Security Solutions: The Application of the Project Management Body of Knowledge for Managing a Science and Technology Project

Donna Wood; Colin Murray; DRDC CSS TN 2011-03; Defence R&D Canada – CSS; February 2011.

Introduction: The Major Events Coordinated Security Solutions (MECSS) project was a multi-agency collaborative partnership, established to reduce the security risk associated with the Vancouver 2010 Winter Olympics and Paralympics, and the G8/G20 Summits. MECSS was implemented as a formal project within the Public Security Technical Program (PSTP), under Defence Research and Development Canada (DRDC) management through the Centre for Security Science (CSS).

Results: MECSS enabled support to the following security partners: RCMP Major Events Section, V2010 Integrated Security Unit, BC Integrated Public Safety, Canadian Forces Joint Task Force Games, and Public Safety Canada. Decision support, exercise support, reach-back scientific advice and deployed support during the V2010 and G8/G20 Summits was provided in command and control, chemical biological, radiological, nuclear and explosives, critical infrastructure, surveillance, physical security, cyber and psycho-social. Management of the complex elements of the MECSS project was achieved through the application of best practices from the Project Management Institute's Project Management Body of Knowledge including Integration Management, Scope Management, Time Management, Cost Management, Quality Management, Human Resource Management, Communications Management, Risk Management and Procurement Management. The nature of the outputs of the MECSS project ranged from verbal and written advice from subject matter experts, to analysis of laboratory samples during V2010.

Significance: The MECSS project produced more than 195 scientific reports, reflecting the effort, dedication and professionalism of more than 180 scientists, technologists, and others from across DRDC and other federal Departments and Agencies. Management of these outputs would not have been possible without the application of project management best practices.

Future plans: Lessons learned from managing MECSS will be applied to future efforts to operationalize science and technology in support of our public security and public safety partners.

Sommaire

Solutions concertées pour la sécurité de grands événements : Application de l'ensemble des connaissances en gestion de projet du Project Management Institute pour gérer un projet de science et technologie

Donna Wood; Colin Murray; RDDC CSS TN 2011-03; Recherche et développement pour la défense Canada – CSS; Février 2011.

Introduction : Le projet Solutions concertées pour la sécurité des grands événements (SCSGE) était une collaboration de plusieurs organismes mise en place afin d'atténuer les risques pour la sécurité des Jeux olympiques et paralympiques d'hiver de Vancouver 2010 et des sommets du G8 et du G20. Le SCSGE a été mis en œuvre en tant que projet officiel dans le cadre du Programme technique de sécurité publique (PTSP), sous la coordination de Recherche et développement pour la défense Canada (RDDC) et par l'intermédiaire du Centre des sciences pour la sécurité (CSS).

Résultats : Le projet SCSGE a permis d'appuyer les partenaires suivants en matière de sécurité : Section de services de protection des événements majeurs de la GRC, Groupe intégré de la sécurité de Vancouver 2010, Équipe intégrée de sécurité publique de la C.-B., Force opérationnelle interarmées des Forces canadiennes pour les Jeux olympiques et Santé publique Canada. Il a permis d'offrir de l'aide à la décision, du soutien aux exercices, des conseils scientifiques extérieurs et du soutien aux opérations de déploiement durant les Jeux olympiques et les sommets dans les domaines connexes au commandement et contrôle, aux incidents chimiques, biologiques, radiologiques, nucléaires et explosifs (CBRNE), aux infrastructures essentielles, à la surveillance, à la sécurité physique, à la cybernétique et à la socio-psychologie. La gestion des éléments complexes du projet SCSGE s'est effectuée grâce à l'application des meilleures pratiques de l'ensemble des connaissances sur la gestion du Project Management Institute, y compris la gestion de l'intégration, de la portée, du temps, des coûts, de la qualité, des ressources humaines, des communications, des risques et de l'approvisionnement. Les données du projet SCSGE proviennent de conseils écrits et verbaux faits par des experts en la matière pour l'analyse d'échantillons de laboratoire durant Vancouver 2010.

Importance : Dans le cadre du projet SCSGE, on a produit plus de 195 rapports scientifiques, fruit des efforts, du dévouement et du professionnalisme de plus de 180 scientifiques, technologues et autres professionnels de RDDC ainsi que d'autres ministères et organismes fédéraux. La gestion de ces données aurait été impossible sans l'application des meilleures pratiques en matière de gestion de projet.

Recherches futures : Les leçons retenues de la gestion du SCSGE seront mises à profit lors de recherches futures afin d'opérationnaliser la science et la technologie en appui à nos partenaires en matière de sécurité publique.

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1 General Information

1.1 Background

The Royal Canadian Mounted Police (RCMP) had lead responsibility for the security for the Vancouver 2010 Winter Olympic and Paralympic Games (V2010) – a challenging task given the complex environment and the many security partners. V2010 offered an opportunity for Canada's science and technology (S&T) community to step up and support public security and safety partners in addressing some of the more complex and non-traditional security challenges associated with an event of this magnitude.

Science and Technology support to v2010 began in 2005. Initially it focused on a command and control effort that included the Department of National Defence (DND), Canadian Forces Experimentation Centre (CFEC), Canada Command (CanadaCOM), Defence Research and Development Canada (DRDC) and the Royal Canadian Mounted Police (RCMP). In the fall of 2007, a full scale experiment called Pegasus Guardian (PG) was held in British Columbia. This early event demonstrated the value of scientific support to planning and was the catalyst for the senior leadership from the Privy Council Office (PCO), the RCMP and DRDC to discuss the opportunity for an integrated approach to federal S&T. This resulted in direction from the Assistant Deputy Minister Science and Technology (ADM S&T) to create a project to coordinate federal S&T in support of the V2010 security partners.

1.2 Project Management Body of Knowledge

The Project Management Institute (PMI) is an international not-for-profit association that supports the project management profession. With more than half a million members from 185 countries, PMI is best-known for its Project Management Professional (PMP®) credential. A project manager who has the PMP credential has demonstrated a commitment to professionalism, competency and continuous learning.

The Project Management Body of Knowledge (PMBOK), one of the standards established by PMI, represents the sum of knowledge related to project management and includes best practises and techniques generally accepted by the project management profession.

PMI defines a project as "a temporary endeavour undertaken to create a unique product or service". While every project must have a beginning and a defined end, the results of the project will traditionally have a lasting benefit. A project is also characterized by the need to balance scope, time, cost, risk and quality through the application of a number of iterative processes (initiating, planning, executing, controlling and closing).

A core element of the PMBOK is the definition of the knowledge areas supported by tools and techniques within each of the knowledge areas. This report discusses the management of the MECSS project in the context of the following PMBOK knowledge areas:

a. Integration Management,

b. Scope Management,

c. Time Management,

d. Cost Management,

e. Quality Management,

f. Human Resource Management,

g. Communications Management,

h. Risk Management, and

i. Procurement Management.

1.3 MECSS Project Objectives

The MECSS project was created to reduce the security risk associated with V2010 through the coordinated application of S&T with a focus on science-based decision-making and technological solutions for security problems. Two high level objectives were established:

a. Assist the functional authorities in reducing the security risk associated with V2010 through the coordinated application of S&T, and

b. Contribute to the establishment of an enduring Major Event Security Framework that can be applied to future Major Events in Canada.

Formal project approval was received in May 2008. Due to the success of the project, the scope was formally changed in March 2010 to also include the G8/G20 Summits. The final approved budget was for $8.6M.

1.4 Project Summary

The MECSS Project was managed through DRDC Centre for Security Science (CSS), and was set up as a project within the federally funded Public Security Technical Program (PSTP). It was governed through a Senior Review Board (SRB) with membership that included DRDC, Public Safety Canada, the RCMP, the Province of British Columbia, the V2010 Integrated Security Unit (ISU), and CanadaCOM. The initial scope included S&T support to: critical infrastructure (CI), command and control (C2), chemical, biological, radiological, nuclear and explosives (CBRNE), surveillance, psychosocial, exercises, major event framework and operations issues as demonstrated in Figure 1.

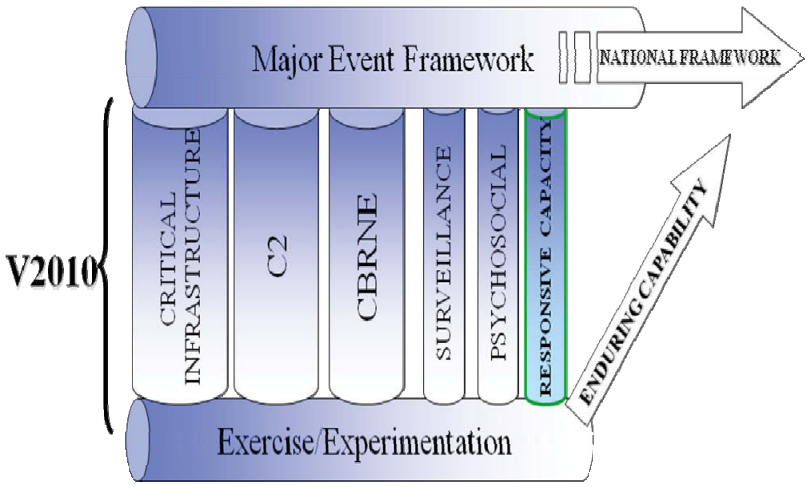

Figure 1: MECSS Project Scope

The work conducted by the MECSS project was conducted in an extremely complex, multi-organizational environment that spanned a variety of public organizations (federal, provincial and municipal) as well as industry and academia. The reach of the MECSS project is shown in Figure 2.

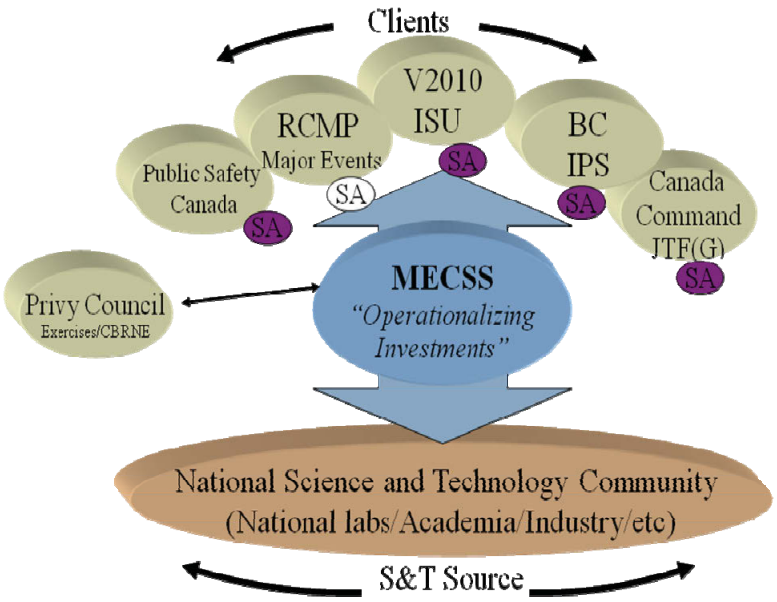

Figure 2: MECSS Partner Engagement

With the exception of the Canadian Forces (CF), the safety and security partners had little experience exploiting S&T for operational challenges. Scientific Advisors (SAs) were embedded within the planning teams of the operational partners and played the roles of trusted advisors, knowledge integrators, risk mitigators, and innovation catalysts. The relationships established allowed the security partners to further exploit the expertise existing in the national S&T community.

The diversity of the project team introduced unique challenges in that the team was geographically dispersed across the entire country, scientifically diverse covering a broad spectrum of specialty areas, and organizationally diverse. Responsibility for delivery of some of the project results extended beyond the vertical authority of the MECSS project and included engagement from other federal, provincial and municipal organizations as well as academia and industry.

MECSS coordinated activities across several agencies, departments, and jurisdictions. Given this non-traditional nature, the project was confronted with many challenges. MECSS relationships with the key security partners became the most important element in creating favourable conditions for understanding the requirements and subsequently effectively exploiting S&T support. The development and maintenance of these relationships became a prominent activity for the project leadership and the core MECSS team. The horizontal nature of the project also created challenges pertaining to the gap in organizational cultures, which were often misunderstood or misinterpreted. MECSS was also confronted with more traditional challenges such as those associated with the lack of standardization for the distribution and sharing of classified information between organizations and across jurisdictions.

1.5 Project Team

The core MECSS project team consisted of a Project Director, Project Manager and Exploitation Officer who were supported by four support staff, four subject matter experts and five scientific advisors. In addition to the MECSS project team identified in Annex A, more than 180 employees from DRDC and other federal S&T organizations played an active role in delivering elements of the project. Annex B contains the roles and responsibilities for the core MECSS team.

The Project Director was responsible for scope management and communications related to the external stakeholders. As the Senior Military Officer (SMO) at the DRDC Centre for Security Science (CSS), the Project Director was also responsible for the operational deployment of DRDC employees during the Events.

The Project Manager was responsible for ensuring that all project objectives were met within the assigned resources and for managing and administering all project-related activities.

The Exploitation Officer was responsible for ensuring the project outputs adequately represented the needs of the target organizations and for ensuring that the project team members adequately understood the operational context for delivering project results.

Throughout the MECSS project, the clients for the project were referred to as “partners”.

2 Project Performance

2.1 Special Management Methods

The MECSS project was not a traditional project with a neatly defined and tangible output at the onset. Neither was it a traditional research and development project with an objective of proving a concept or developing a prototype. The project outputs could be classed as knowledge, expertise, advice and decision support although the real value of the project was the outcome achieved in contributing to a safe and secure V2010 and G8/G20 Summits. The outcomes achieved can also be determined by the enhanced respect and appreciation for the value of S&T for operational planning and the developed relationships which will be beneficial for years to come.

The MECSS project has demonstrated that the principles of project management can be applied even to those activities that naturally resist the structure and accountability afforded by a project management framework. In fact, the application of strong project management served to give credibility to the team and to engender trust in the output.

DRDC believes strongly in the application of sound project management principles and uses an abbreviated version of the DND process for capital projects to manage technology demonstration projects. The MECSS project however was thought of as a 'support to operations' project and not a technology demonstration project. The project management model provided the oversight and rigour needed to manage such a critical effort and was a model well familiar to the DRDC research centre teams. As a result of lessons learned from V2010, modifications were made for the G8/G20 that saw increased accountability through the chain of command and the SMO network, specifically those activities related to the deployment of civilian employees during a domestic security operation. For the purposes of the project management structure, the deployment was treated as an independent activity under MECSS with the DRDC CSS SMO responsible for delivery.

Early in the project the team looked at options to understand the problems facing the project partners and to introduce S&T opportunities to the planners. The embedding of SAs in the V2010 ISU, the Province of British Columbia Integrated Public Safety (IPS) team, CF Joint Task Force Games (JTFG) and the RCMP Major Events section, to build trust and collaboration, proved to be the greatest achievement of the project. The SAs (one for each of the security partners) played a critical integration role. In support of scope management, the SAs were the portal for the partners to request new or changed requirements. As senior scientists, the SAs were in a perfect position to understand and interpret the requirements as well as to prioritize the need before submitting them to the Project Manager (PM) and Project Director (PD). They also had extensive knowledge of DRDC and other federal S&T capabilities and could provide initial analysis on the feasibility of the work requested. From a communications management perspective, having them embedded with the partner organizations created a dedicated node for the distribution and interpretation of results. Their position within the partner organizations also enabled early identification of risks and issues that might affect project delivery.

SMOs within the DRDC research centres were key nodes in the reach-back system established by MECSS. Requests for advice and support were often accompanied by short timeframes. The

military background of the SMOs ensured that requests were treated with the appropriate urgency to meet the time requirements of the partners. Their linkages to the management team inside the research centres also supported MECSS by engaging the appropriate expertise to address questions or problems.

DRDC CSS has a signed Memorandum of Understanding (MOU) with 21 federal departments to collaborate on S&T. The MECSS project was able to leverage the relationships established under this MOU to obtain access to expertise not readily available within DRDC. These linkages were used by the MECSS project to address needs in the area of blast analysis, CBRN, cyber, and psychosocial.

One additional area where MECSS caused changes in the traditional delivery of S&T was in the timeframe within which a valid response was provided. Scientists are accustomed to studying an issue thoroughly before providing a complete and verifiable response. The planning cycle for V2010 and the G8/G20 did not afford this luxury. Where publishing results can take months if not years, the MECSS project was asking the scientific community to provide quality responses in days. This required a change in the method of conducting the work and in presenting the work. This change met the needs of the operational clients perfectly as they were able to make the necessary informed decisions in a timely manner

2.2 Innovative Solutions

The MECSS Project achievements are significant. During the course of the Project more than 180 DRDC employees were called on to deliver support to exercises, operational planning, and security operations in addition to logistic support to the scientific elements. To date, over 195 scientific reports have been published which will serve future generations of safety and security planners. The magnitude of these achievements is noted in the degree to which S&T advice and support was incorporated into the security plans and deliverables leading up to V2010, G8, and G20, as well as the degree to which deployed S&T capabilities were called on to support security operations during these events. The project's achievements are also reflected in the legacy outcomes, such as the Major Event Security Framework, a Web 2.0 based planning tool, which will guide future Major Event security planning across government and institutionalize a knowledge transfer structure. A less tangible but equally significant achievement is the extent to which the project contributed to the operationalization of national S&T in support of safety and security operations in Canada. Recent calls for additional support from leadership within Privy Council Office demonstrate how the Project outcomes have also contributed to an enhanced awareness of S&T in support of planning, operations, as well as policy development at the strategic level within our federal system.

The nature of the support provided by MECSS was such that new and innovative ways of looking at problems and exploring solutions were presented. As is the case with S&T, not every innovative perspective resulted in changes or new solutions. In some cases, the complexity of the problem space could not be adequately addressed within the time available. Additional MECSS outputs are included at Annex C, however the following selection of outputs are particularly noteworthy and will have a lasting impact on future security operations.

2.2.1 Science Town

Science Town is the moniker for a multi-agency, mobile laboratory capability that brings together world class equipment and expertise in support of the RCMP National CBRNE Response Team. As a result of previous investments from the CBRNE Research Technology Initiative (CRTI), MECSS was able to leverage existing relationships and capabilities to develop the basic concept of operations, command and control relationships, as well as coordinate the planning and setup of Science Town at each of the two primary Olympics sites. Annex D shows some photos of the resulting Science Town setup.

2.2.2 VSA/PSA Modelling

Vehicle Screening Areas (VSAs) and Pedestrian Screening Areas (PSAs) were used by the V2010 ISU to reduce the risk of vehicle-borne and person-borne prohibited items. MECSS developed three classes of software-based tools to support these efforts and conducted quantitative analysis during a number of exercises leading up to V2010. Scientific expertise was also provided during V2010 to troubleshoot problems encountered. The outcomes associated with VSA and PSA support to the ISU are heralded as a profound success and an excellent demonstration of DRDC's ability to deliver timely, rigorous and highly relevant quantitative analysis in support of V2010 planning. MECSS was specifically requested to provide the same analytical support for G8/G20. Time constraints limited the additional support to on-site analysis just prior to the Summits. The scientist responsible for this work was subsequently deployed to the United Kingdom to provide similar support and analysis in their preparations for the 2012 Summer Olympics.

2.2.3 V2010 Asset Criticality Analysis

The protection of critical infrastructure was an area of concern to both the RCMP and the Province of BC. MECSS introduced a model that allowed the identification of those infrastructure services which were most critical to the delivery of V2010. A core element required the identification of specific components, information only available from the infrastructure owners and highly protected intellectual property. Through much negotiation and a great deal of cooperation, the required information was obtained from the infrastructure owners which allowed the completion of the model and the identification of the critical elements. This work has legacy value and will serve the Province of BC for future analysis.

2.2.4 Major Event Security Framework

Canada's experience and associated challenges with security preparations for V2010 and the G8/ G20 Summits have illustrated opportunities for a stronger alignment of planning activities across the domestic security domain. In support of the RCMP, MECSS undertook the development of a Major Events Security Framework that is intended to serve as a planning forum that integrates "whole of government" collaborative planning for security operations. This is aWeb 2.0 based knowledge management system that identifies best practices, captures lessons, effects change and champions innovation and contains a repository of value-added tools and technologies. The prototype is housed in GCPedia (an internal government of Canada wiki) and is further supported by Treasury Board Chief Information Officer Branch.

3 Project Integration Management

Within DRDC, the Project Synopsis Sheet is used to describe the plans for addressing each of the areas of interest related to achievement of the objectives. The MECSS project Synopsis Sheet included the following elements:

a. Cost and Planned Cash Flows,
b. Project Description,
c. Project Objectives,
d. Schedule,
e. Risk Assessment,
f. Personnel Resources,
g. Organizational Structure and Responsibilities,
h. Project Management Strategy
    i. Performance Monitoring and Reporting,
    ii. Change Management and Control,
    iii. Risk Management,
    iv. Project Review,
    v. Communications,
    vi. Financial Reporting,
    vii. Responsibility Assignment Matrix, and
    viii. Project Closeout.
i. Procurement Strategy,
j. Project Scope
    i. Included Work,
    ii. Excluded Work,
    iii. Assumptions,
    iv. Constraints, and
    v. Related Projects.

The Synopsis Sheet was developed by the PD and the PM in consultation with the safety and security partners. In order to achieve consensus, the final plan required analysis of the various input plans and trade-offs to be made.

The direction from senior leadership was that V2010 was to be a no-fail operation and that this priority was to be considered in the planning for MECSS. In the trade-off between time, cost and quality, the time element was inflexible. The outputs of the MECSS project would be held to a strict timeline with no delays or time slippages allowed if the results were to be of value to the planners. The PM and PD were directed in their planning to be realistic in their cost estimates while having consideration for proper stewardship of public funds. The resulting Synopsis Sheet optimized the various elements and made commitments for only those work packages the team felt they could reasonably deliver within the time constraints provided and the personnel resources readily available.

Some of the linkages played significantly in the MECSS project, ie.:

a. The risk assessment identified linkages to human resources, cost, and contracting and communications.

b. The schedule imposed constraints on scope, quality and contracting, and

c. The scope impacted human resource requirements and communications.

The SAs were key elements of the change management process (outlined in Figure 3) providing input on changes requested, prioritization, risks and impact. The SMOs were the principal nodes in the reach-back process that was used to access additional resources for changes requested.

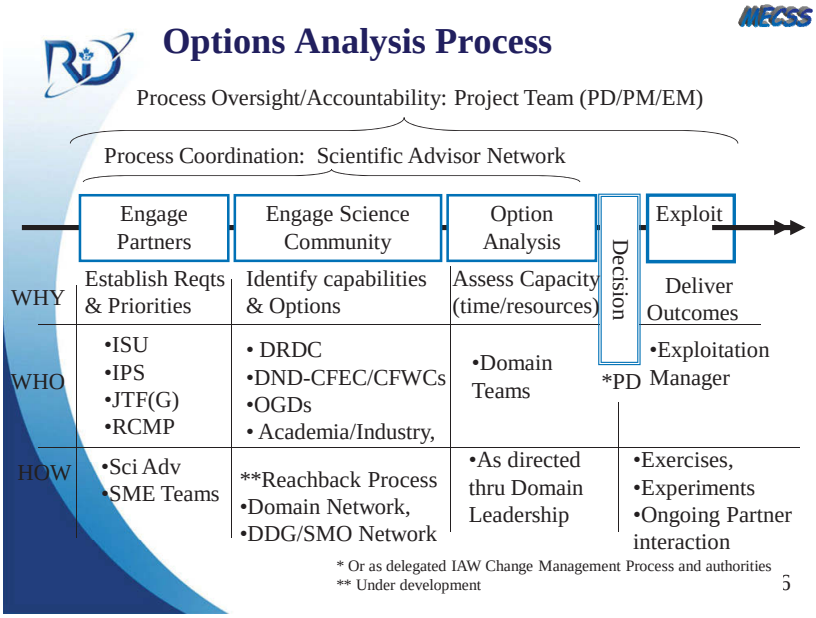

Figure 3: Change Management Decision Process

In deciding whether or not a change request was reasonable, the following questions were considered:

a. Is there an S&T element of the work requested?

b. Is the expertise available within the federal S&T community?

c. Can the work be completed within the timeframe required?

d. Is there a cost/budget impact?

e. Has a specific security partner been identified?

f. Where does this work fit with other priorities?

The importance of the MECSS project deliverables was reflected in the attention provided by the Senior Review Board (SRB). Instead of the traditional DRDC annual SRB, the MECSS SRB convened approximately every quarter. This permitted quick input and endorsement of changes to meet the operational tempo. A Project Review Meeting (PRM) was held approximately monthly to work out issues and explore impact of actions on the various areas within the project.

Finally, the lessons learned were captured in a number of ways. As part of the project closeout, a formal closeout report was created that captures the experiences of the entire project team and effectively summarizes the work performed.

The primary source of lessons learned is captured in the official files that contain the 195+ reports documenting the advice. In addition to the more informal reports provided directly to the security partners, the scientists are also investing time after the closure of the project to conduct additional analyses and to document their work in more detail in formal technical reports.

4 Project Scope Management

The definition of the project scope proved to be a challenging task. The MECSS PD explored, with the security partners, the areas of highest priority to be considered. In the end, the decision was made to focus on the specific strengths of DRDC and the federal S&T community while paying particular attention to the non-traditional difficult problems facing the security planners. Examples of areas that were identified early included:

a. Identification of critical infrastructure (CI) interdependencies.

b. Command and control concepts of operations.

c. Physical security, and

d. CBRNE planning and preparation.

In cooperation with the MECSS security partners and in consultation with DRDC management, an agreed scope of work was developed and incorporated in the MECSS Synopsis Sheet. The resulting Work Breakdown Structure (WBS) can be seen at Annex E clearly demonstrating the broad scope of the MECSS project.

It would normally be ideal for a project to proceed with a very well defined scope and for this scope to remain unchanged for the duration of the project. Reality for managing projects is far different. For the MECSS project, it was fully expected that the security partners would approach the team to change the scope. For this reason, a formal process was put in place to address changes in scope and contingency funds were included.

Microsoft SharePoint® was the principle tool used to monitor progress on each of the approved work packages. Activities were tracked if there was a formal deliverable of advice, service or product for one of the security partners where the activity could be assigned primary responsibility to a member of the MECSS team and within the defined domains.

Work packages were initially defined at a high level. Through continued engagement with the security partners, the domain leads and SAs were better able to define the details of the work packages and expand the WBS. This allowed for discrete bundling and assignment of smaller work packages that resulted in unique deliverables and engagement of a wider range of scientific expertise.

As the project progressed, the team received requests that were within the scope of the project, but where the results required more focus. An example was cyber security which was initially tracked under the command and control domain, but was later recognized as a specialty element better managed on its own.

Annex F describes the detailed reach-back process designed for use during V2010 to handle new requirements for support.

5 Project Time/Schedule Management

The MECSS project was a perfect example of a project with a fixed time schedule. In addition to the dates for V2010 being firmly established, all of the planning milestones were also set by outside agencies. This meant that the MECSS project needed to adjust the work completed to fit within this timeline. Working to this timeline was a challenge because the science community was not accustomed to working at an operational pace. An example of this was the C2 analysis work done in support of the exercises where the analysis team was expected to provide the report early the week following the exercise.

The MECSS project was planned to be executed in Five Phases (detailed timings in Table 1):

a. **Project Initiation**. This phase included all activities related to the negotiation of project scope and the development of project approval documents.

b. **Project Approval**. This phase included all activities required to get formal sign-off on the Synopsis Sheet

c. **Develop/Exercise Phase**. This phase of the project covered all of the activities during the planning phase for V2010 and lasted until the first employees deployed to Vancouver and Whistler.

d. **Conduct Phase**. This phase included the deployment of DRDC employees to Vancouver and Whistler and lasted until the end of the Paralympics. With the addition of the G8/G20 to the scope of the project, there was a second Develop Phase and a second Conduct phase.

e. **Project Completion**. The closeout phase of the project lasted from the end of the G8/G20 Summits until the end of the project. The focus was on contract closeout, collection of reports and moving SAs back from Vancouver.

Table 1: MECSS Project Schedule

Phase	Original Dates	Actual Dates
Project Initiation	Nov 07 – 26 Feb 08	Nov 07 – 4 May 08
Project Approval	26 Feb 08 – 3 May 08	5 May 08
V2010 Develop/Exercise	3 May 08 – 31 Dec 09	5 May 08 – 14 Jan 10
V2010 Conduct (Deployment)	1 Jan 10 – 31 Mar 10	15 Jan 10 – 21 Mar 10
G8/G20 Develop/Exercise[1]		22 Mar 10 – 18 Jun 10
G8/G20 Conduct (Deployment)		19 Jun 10 – 4 Jul 10
Project Completion	1 Jun 10 – 31 May 10	5 Jul 10 – 31 Jul 10

[1] The scope of the MECSS project was officially changed in May 2010 to include G8/G20 however the change in scope was endorsed by the SRB on 1 Dec 2009.

6 Project Cost/Resource Management

Differences in the budgets between planned (Table 2 below) and final (Table 3 below) can be justified as follows.

a. At project approval, it was thought that a second Command, Control, Computer, Communications, Intelligence, Surveillance, Reconnaissance (C4ISR) mobile lab might be purchased to support the CF. Shortly after project approval, it was decided there was insufficient time available for a second lab to be built and that the CF would need to suffice with the one lab from DRDC Valcartier. The cost for this work element was removed from the cost baseline.

b. The increase in budget for 09/10 was primarily due to the increased scope related to the design, development and delivery of two live-play exercises for Richmond and Vancouver, BC as part of Exercise Gold as well as the complexity of deploying Science Town to BC.

c. Costs for FY10/11 were originally planned to support closeout activities and instead were expended on support to G8/G20. In the end, closeout activities were less complex than originally thought and required very little funding.

Table 2: MECSS Project Planned Cash Flows

($000 BY)	FY 07/08	FY 08/09	FY 09/10	FY 10/11	Total
DRDC Agility Fund	25	4327.8	2809.8	299.6	7462.2
CRTI		370	650		1020
PSTP		230	340	40	610
Total	**25**	**4927.8**	**3799.8**	**339.6**	**9092.2**
Contingency		492.78	379.98	33.96	906.72
Total Project Cost	**25**	**5420.58**	**4179.78**	**373.56**	**9998.92**

Table 3: MECSS Project Actual Cash Flows

($000 BY)	FY 07/08	FY 08/09	FY 09/10	FY 10/11	Total
DRDC Agility Fund	25	2997	2419	204	5441
CRTI			2455	33	2488
PSTP					
Total	**25**	**2997**	**4874**	**237**	**7929**

Access to contingency funds was a key element of the risk management plan. The MECSS project team had no way of knowing if additional and specialized support would be needed during V2010 (or the G8/G20 Summits) in response to urgent operational requirements and thus

requested significant funding to cover this possibility. In the end access to these funds was not required.

The primary cost drivers were contract services, travel and personnel overtime. MECSS was not required to account for employee salary costs, only incremental costs needed to be covered by the project budget however the human resources contributions were tracked and recorded as person-years.

Within the budget assigned to the project, the team had flexibility to adjust to meet requirements so that the emphasis was on ensuring responsible stewardship of the funds allocated. Careful attention was paid to ensure expenditures on travel and overtime were justified and absolutely required to meet the project requirements. Contract costs were carefully monitored to ensure maximum value. The use of DRDC or other federal employees was preferred, not only for cost savings, but also for maximum quality as further explained in the next section.

7 Project Quality Management

The scientific community is accustomed to ensuring that advice provided is based on sound scientific principles and can withstand the rigours of peer review. It was critical to the MECSS project that the analysis and support provided to the security partners be seen as credible and unbiased. Throughout the project, the team worked hard to ensure that the independence of outputs was emphasized. This in fact became one of the benefits of using federal employees in lieu of contractors.

The following elements were implemented by the MECSS project to ensure quality of the products and advice provided:

a. **Domain Leaders**. Senior scientists with significant achievements and work experience were assigned to the domain lead roles. The Domain Leads played a critical role in analyzing the work to be done and identifying the appropriate resources to complete the task. They were also often responsible for reviewing contractor deliverables for quality and accepting the deliverables.

b. **Scientific Advisors**. The SAs were used as a critical interface between security partner requirements and the delivery of MECSS results. With direct access to the partners, the SAs were able to create the linkages with the other scientists to ensure the outputs accurately reflected the requirement. The SAs were also key in the delivery by making sure the appropriate planning team members received timely access to the project outputs.

c. **Access to Scientific Experts**. Prior to accepting requests for additional support, the project team ensured that the right resources were available to conduct the work. This meant that the scientific or technical resource needed to have significant experience and credibility in the field and would be capable of delivering the type of advice required in the timeframe required. When DRDC did not have the appropriate expertise in-house, the project team looked to other federal departments. Credibility of the resource assigned was key to the acceptance of the work by the security partners.

d. **Trusted Relationships**. The project team (especially the PD and the SAs) dedicated a great deal of effort in building the relationships that were critical to the acceptance of project outputs. In the absence of trusted relationships, the security partners would not have faith in the quality of the deliverables.

e. **DRDC Publication Standards**. The MECSS reports were developed to a consistent standard which demonstrated the professionalism of the work conducted. While there was insufficient time to publish all results through the Document Review Panel that is in place in DRDC, the benefits of the process were achieved by following the publication standard.

8 Project Human Resource Management

The MECSS project team was comprised of a combination of direct reports and matrix resources, with the majority being matrix staff with responsibilities in addition to the MECSS project. Three of the SA positions were created specifically for the MECSS project and reported directly to the PM. The fourth was in place to support the CF prior to the creation of the MECSS project. The team was highly distributed with the PD and PM in Ottawa, three of the four SAs in BC, one in Barrie, Ontario and the domain leaders spread between Halifax, Victoria and Ottawa.

Shortly after project approval, a retreat was held in Ottawa to develop team norms and common processes. Prior to this project, many of the team members had previously worked together, although in support of defence instead of public security.

Once work commenced the operational pace was fast with little time for team building or formal synchronizing. Within DRDC, this project was given the highest priority by the executive. This combined with a common mission to contribute to ensuring *a safe and secure Games*, served to create a shared vision among the team. This was the most important factor to maintaining team motivation.

Project Review Meetings were held monthly when there were no conflicts with pre-scheduled exercises or support activities. These were successful in allowing the domain leads to maintain situational awareness for activities in the other domains.

Issues were experienced in providing logistic support to the two SAs deployed to Vancouver due to the distance from the supporting unit. As a result of the lessons learned, changes were made in the handling of the SA for the G8/G20.

The DRDC Human Resources (HR) team played a key role in developing employee policies to support the deployment of employees in support of a domestic operation. Policies had already been developed to allow the deployment of employees to Afghanistan however these policies were not applicable to operations within Canada. The MECSS project team worked with the DRDC HR team to ensure the new policy reflected what was required. One key area that required specific attention was engagement of the unions supporting the DRDC employees. The DRDC Labour Management Relations team played a key interface role in addressing the concerns of local union leadership. The development of policies for the deployment of DRDC employees will evolve further as DRDC employees continue to play roles in support of public safety and security events.

The MECSS project was also supported by a number of key people external to the project who directly contributed to the success of the project. The most important person was the Canadian Forces Liaison Officer (LO) at the V2010 ISU. The LO had previous experience working with the S&T community and had a very good appreciation of the capabilities of DRDC. He became a strong supporter and the prime point of contact with the ISU which was primarily comprised of RCMP personnel. He had already built significant trust with the security partners and was able to explain how S&T would benefit them. There are many examples where MECSS was able to achieve its objectives because of the commitment and support of the CF LO.

9 Project Communications Management

The communications strategy developed for the MECSS Project Synopsis Sheet was divided into internal and external stakeholders. The internal stakeholders included the project team and those responsible for delivering elements of the project. By the end of the project, more than 180 DRDC employees had made significant contributions to the achievement of the project objectives through either the delivery of a scientific element or logistic support to the team. The external stakeholders included the DRDC executive team, the security partners including the federal partners and extended to also include the public and media.

Responsibility for delivery of communications plan elements for the MECSS project was split between the PD and the PM. The PD was responsible for external communications while the PM was responsible for internal communications. This matched well with the responsibilities of the PD and PM and maximized the strengths of the individuals in the positions.

Because of the operational nature of the work being undertaken, the MECSS project adopted a reactive public affairs strategy. This meant that standard external communications products would not be needed. Instead, specific targeted products would need to be developed in order to keep the Senior Review Board and security partners appraised of project progress.

The MECSS project adopted a schedule of quarterly SRBs for which formal minutes were taken and distributed. These, supported by targeted individual presentations by the PD, became the principle tools to update the security partners and SRB members. In addition, the progress of the project was briefed regularly to the monthly DRDC Executive meetings. This regular engagement was a key element to obtaining the necessary senior management committee support for short-notice access to S&T resources.

The broad scope of the MECSS project meant that there were many simultaneous and independent work activities progressing at the same time. In addition, the highly distributed project team made it difficult for the team members to maintain adequate situational awareness. Monthly PRMs were held not only to resolve issues, but also to provide an efficient means of communicating progress against project objectives. Records of discussion were maintained for the purposes of communicating to those members who could not be present. The large team size meant it was nearly impossible to have every team member available for a PRM as operational activities were the priority. The PRMs were held using distributed technologies such as video-teleconferencing supported by SharePoint®.

The MECSS SharePoint® portal was a critical tool to maintain situational awareness among the team. A screenshot of the portal is included in Annex G. In addition to providing a workspace for sharing unclassified documents, the portal was used to enable collaboration on specific documents such as the deployment directives for V2010 and for the G8/G20.

The SAs occupied positions of trust in the security partner organizations and were used as active nodes of the communications system for the project, passing information in both directions between the project team and the partners.

Upon project completion, a formal Project Closeout report was generated with input from all core project team members. This closeout report, plus the technical reports and documented advice generated throughout the project, are accessible from the formal project files that have been generated in accordance with the federal government information management standards. Some of these reports are being published as formal technical reports and will also be available from DRDC's S&T report database.

10 Project Risk Management

The primary method used to identify the risks to the project was historical information. DRDC has conducted many technology development projects and the risks tend to be fairly consistent. Each risk was evaluated in terms of likelihood and impact. The priority for the project was on operational performance therefore instead of analyzing in terms of cost of impact, the impact was determined in terms of operational linkages and how it would affect the ability to support the operational clients. A qualitative analysis for each risk was conducted.

Annex H is a table of the risks identified for the MECSS project and some of the mitigation strategies developed as part of the project Synopsis Sheet.

Contingency funds were established to handle any unplanned risks and these were controlled by the SRB. The MECSS project had no requirement to access the contingency funds. The SRB was also interested in the specific risk and proposed responses. The SRB membership was prepared to assist as needed as part of risk response plans to ensure project success.

One risk that was not identified during the project planning was the failure of the primary DRDC network used to share files and send and receive emails. This risk was not identified during the planning phase, and was not a factor during support during V2010. It was however identified as a risk between the V2010 Games and the G8/G20 Summits. This required the project team to explore options and put in place an alternate solution that exploited other technology solutions.

The highest priority risks were monitored by the PD. In addition, regular briefings by the PD to the ADM S&T gave sufficient opportunity to review project risks and solicit support for additional plans.

The PM and PD reviewed the risks in the period immediately prior to V2010 to determine if any new risks had emerged and to confirm that risk responses were reasonable

11 Project Contract/Procurement Management

The project team identified two risks that were directly related to contract and procurement management. Government procurement tends to take a very long time and requires many checkpoints to ensure efficient use of public funds and to ensure the entire process is fully transparent. This was in conflict with the strict time constraints on the project. In addition, the project team also recognized that some of the requirements of the partners would be specialized and it would need expertise beyond what was readily available within the federal S&T community.

During the project planning phase, existing contract mechanisms that could be exploited were explored. The team identified a number of standing offers and contracts and negotiated their use with the technical authorities of the contracts. This allowed the team to make commitments for specific work packages from the onset. It was recognized that there would be insufficient time to pursue competitive contracts for every requirement.

During the MECSS project, competitive, sole source, supply arrangements, and standing offers were each used. Each contract mechanism had its own documentation and process that required flexibility from the project team. In order to spread the workload, procurement support was distributed among DRDC Toronto, DRDC Valcartier, DRDC Suffield, as well as the CF in Chilliwack.

The MECSS project issued a competitive contract that turned out to be a good demonstration of the ease with which competitive contracts can be put in place and the financial benefit that could result. MECSS put in place a contract to purchase chemical detection equipment to support training of first responders in BC. The first responders preferred a specific device however federal procurement regulations precluded the selection of a specific product from a specific vendor without sufficient justification. A detailed specification was developed and the requirement was competed. A total of five bids were received of which four were compliant proposing three different products. The lowest compliant bid was awarded a contract. It turned out to be for the preferred product, however this equipment was provided at an approximate savings of $30k over the proposed sole source price. The total effort to achieve this was approximately 12 hours of the PM's time over 2 months. Many people prefer sole source contracts believing them to be faster and easier to obtain the best or preferred product. The MECSS experience demonstrated that not only can the competitive process obtain better value for the Crown, but that the entire effort is not insurmountable.

The MECSS project also demonstrated efficiencies of effort by putting in place contracts for services during V2010 to provide electricity, internet and water services to mobile laboratories positioned in Vancouver and Whistler on behalf of a number of other federal departments (Health Canada, Public Health Agency of Canada, Environment Canada, RCMP). It is normal practice for each department to put its own contracts in place, but by having MECSS put these contracts in place (sharing the costs with the other departments), efficiencies were achieved.

Formal contract files were maintained. Each file was considered complete when it contained a Statement of Work, a quote or proposal, invoices, progress reports (if applicable) and a copy of the deliverables. At the end of the project, MECSS had put in place more than 40 contracts of all

types ranging from $5k to $500k. Only one contract had any issues and these issues were related to delays and errors in invoicing on behalf of the contractor which in this case was a university unaccustomed to contracting with the federal government. As the contract authority, Public Works and Government Services Canada was engaged to sort out the invoicing problems with this contract.

12 Conclusions

The MECSS project was created to assist the functional authorities in reducing the security risk associated with V2010 through the coordinated application of S&T as well as to contribute to the establishment of an enduring Major Event Security Event Framework that could be applied to future Major Events in Canada. It was managed through the DRDC Centre for Security Science (CSS) and was set up as a formal project within the Public Security Technical Program. The work conducted by the MECSS project was conducted in an extremely complex, multi-organizational environment that spanned a variety of public organizations (federal, provincial and municipal) as well as industry and academia. The diversity of the project team introduced unique challenges in that the team was geographically dispersed across the entire country, scientifically diverse covering a broad spectrum of specialty areas, and organizationally diverse with the delivery of project results extending beyond the vertical authority of the project team.

The PMI Project Management Body of Knowledge provided a framework to ensure the project team was well positioned to deliver on the project objectives. The MECSS project used many of the tools, techniques and best practices in each of the PMBOK knowledge areas (Integration, Scope, Time, Cost, Quality, Human Resource, Communications, Risk, and Procurement).

The MECSS project has demonstrated that the principles of project management can be applied even to those activities that naturally resist the structure and accountability afforded by a project management framework. In fact, the application of strong project management served to give credibility to the team and to engender trust in the output.

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Project Management Institute (2000). A guide to the project management body of knowledge: (PMBOK guide). Project Management Institute, Inc., Newtown Square, PA.

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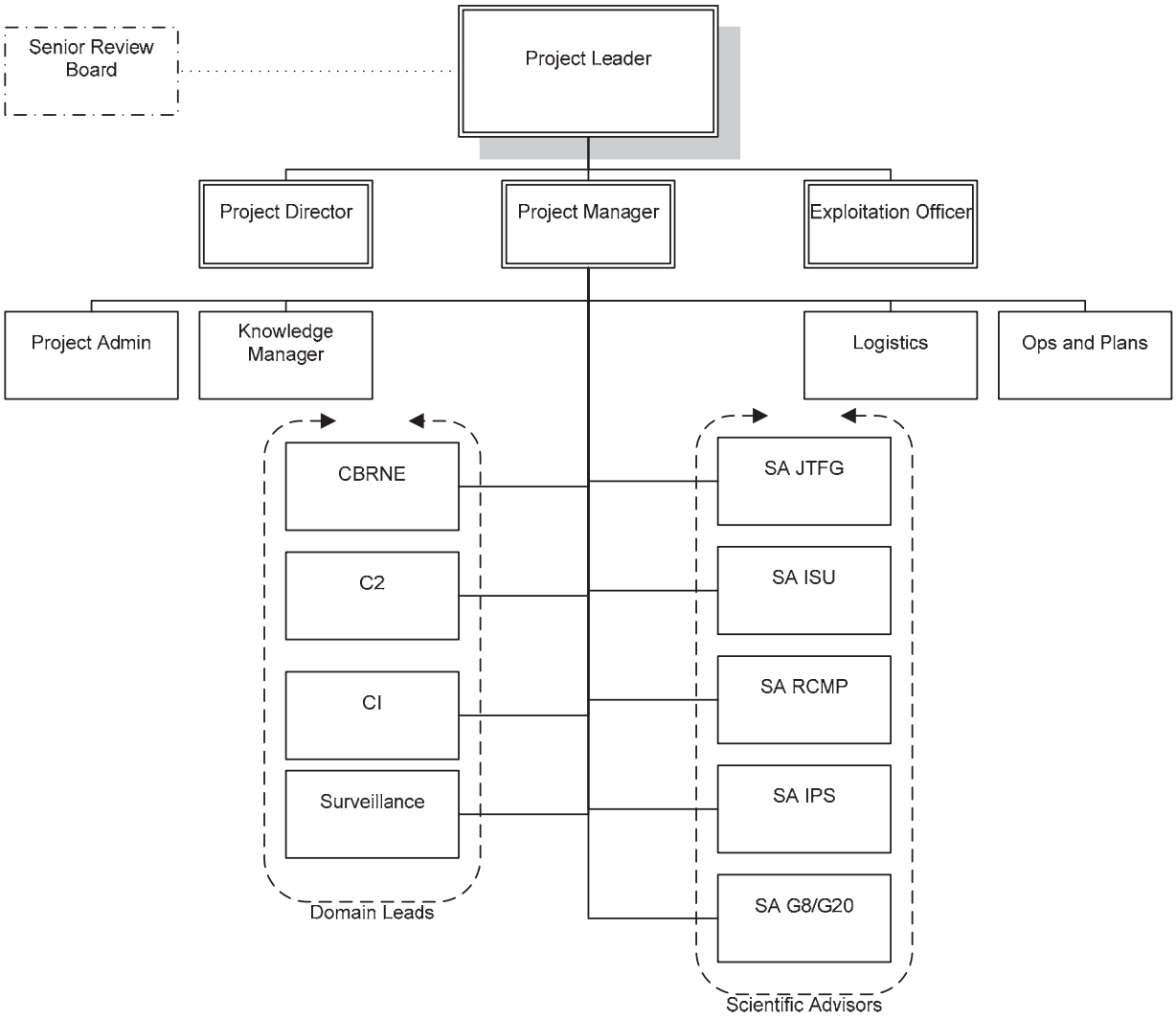
Annex A MECSS Project Organization Chart



Annex B MECSS Project Team Member Roles and Responsibilities

Senior Review Board (SRB). The SRB was responsible for:

a. Advising the Project Leader on the management of the project;
b. Providing the project team with sufficient guidance, staff assistance and delegated authority for the proper conduct of the project;
c. Considering and recommending options presented by the Project Team;
d. Reviewing all recommended proposals to change the project scope;
e. Ensuring that contingency funds are used for activities within the scope of the project;
f. Monitoring and reviewing project progress, including issues of finance, personnel and contracting;
g. Providing guidance in the development of the Exploitation Plan, and
h. Ensuring that the project team complies with the policies and procedures imposed by higher authority.

Project Leader (PL). The Project Leader was responsible for:

a. Chairing the Senior Review Board and overseeing the implementation of the project;
b. Ensuring conflicts between project participants are resolved in a manner commensurate with the project's objectives and constraints;
c. Controlling the expenditure of contingency funds and ensuring that such expenditure is consistent with the approved scope of the project and reviewed by the SRB;
d. Ensuring that progress is made towards the approved objectives according to plan, and that corrective action is taken whenever necessary;
e. Ensuring compliance with appropriate management practices, consistent with the methods and procedures for the management of projects in DND; and
f. Acting as lead for support to operations functions

Project Director (PD). The Project Director was responsible for:

a. Monitoring progress and providing guidance to the Project Team;
b. Assisting the Exploitation Officer (EO) in the development and implementation of the Exploitation Plan
c. Assisting the EO in the coordination of activities associated with the Exploitation Plan and in the identification of resources required to support these activities;
d. In consultation with the PM, resolving conflicts between various aspects of project requirements
e. Participating in meetings to ensure the objectives of the project are met;
f. Advising Senior Management of any significant developments which may affect the project in meeting its objectives and on what corrective action has or should be taken; and
g. As Operational Lead, leading the support to operations elements of DRDC contributions to the deployment and employment of DRDC personnel during the period of the security operations, as detailed in the DRDC Operations Directive.

Project Manager (PM). The Project Manager was responsible for:

a. Ensuring that all approved project objectives are met, within the assigned resources;
b. Managing and administering all project-related activities;
c. Coordinating all requests for support from the sponsor organizations;
d. Managing and coordinating the implementation of the project's Communications Plan;
e. Collaborating with the EO in the development of the Exploitation Plan;
f. Collaborating with the EO in the coordination of activities associated with the Exploitation Plan and in the identification of resources required to support these activities;
g. In consultation with the PD and EO, resolving conflicts between various aspects of project requirements by assigning priorities;
h. Ensuring problems and differences are resolved at the lowest possible level;
i. Complying with appropriate management practices, consistent with the methods and procedures for the management of projects in DND, and
j. Advising Senior Management of any significant developments which may affect the project in meeting its objectives and identifying what corrective actions have been taken or should be taken

Exploitation Officer (EO). The Exploitation Officer was responsible for:

a. Ensuring project outputs adequately represent the needs of the target organizations;
b. Ensuring project team members adequately understand the operational context for delivering project results;
c. Preparing with the support of the Project Team an Exploitation Strategy that will be incorporated into the project approved documentation;
d. Coordinating activities associated with the Exploitation Plan and liaising with participating organizations to enlist their support, and
e. Reviewing and adjusting the Exploitation Plan as required based on results of experiments and / or field trials

Scientific Advisors (SA). The Scientific Advisors were responsible for:

a. Representing the federal S&T community to the sponsor organization,
b. Communicating gaps and requirements for S&T support to the MECSS project team,
c. Communicating prioritization of support,
d. Acting as the single entry point for all S&T support to the sponsor organization,
e. Arranging for access to operational agents,
f. Directly providing S&T advice to the sponsor organization

Domain Leads. The domain leads were responsible for:

a. Identifying scientific expertise in the domain from within DRDC, the federal S&T community, academia, allies or industry
b. Bringing together the domain experts monthly to share advancements and efforts related to V2010 and G8 areas of interest
c. Recommending specific expertise to address specific areas of need for the MECSS project

Annex C Sample of the Major Outputs of the MECSS Project

In addition to the innovative solutions mentioned in Section 2.2, the following list outlines some of the more significant outputs of the MECSS project.

Province of BC CBRNE Inventory: MECSS supported the Province of BC in the capturing of all personnel and equipment available in the Vancouver area that could be made available to support a CBRNE event. The results of this inventory were used by the Province to advise on investment decisions.

CBRNE Drills and Training: The MOU with 21 federal departments allowed the MECSS project to leverage skills and resources from other federal departments to provide focused training of first responders in BC. Formal courses were provided in Chemical, Biological and Radiological/Nuclear (CBRN) as well as Forensics.

CBRNE Exercises: The MECSS project designed, developed and delivered a whole-of-government CBRNE Table Top Exercise in addition to two live-play exercises during Exercise Gold: a radiological event in Vancouver and a chemical event in Richmond, BC.

Command and Control Architecture and Process Modelling: This work supported the ISU and its security partners to build a viable C2 architecture. This work helped to identify functional goals, articulate the aligned operational processes and determine the Information Management/Information Technology systems needed to support them. Early work involved contributing to the development of the ISU C2 concept of operations.

Communication and Information Systems Work for CF: This activity involved the survey, documentation and analysis of the proposed CF Communications Information System (CIS) architecture across the Joint Area of Operation. A set of interactive documents were delivered to JTFG and deployed to support planning, trouble shooting and redeployment of the infrastructure. These results were also used to provide the Commander JTFG with an assessment of CIS operational readiness.

Command Centre Design: This activity involved S&T support for performing ergonomic analysis and workspace design for ISU operations and command centres. A series of studies were conducted in which initial workspace solutions were produced for the Theatre Command Centre, Vancouver Area Command Centre, Whistler Area Command Centre, Air Support Operations Command Centre, Olympic Marine Operations Centre and CF Games Joint Operations Centre

Deployment of Information Sharing Solution on Command Net: MECSS implemented an information sharing and collaboration portal based on SharePoint®, including a CIS dashboard used for daily commander's briefs. The SharePoint® implementation is solution is a legacy that will be transitioned to other Canada Command organizations.

V2010 Venue Blast Analysis: The MECSS project provided the ISU with first order analysis for a number of venues through expertise resident in the Canadian Explosives Research Laboratory

(CERL) in National Resources Canada (NRCan) and detailed analysis for the downtown Vancouver venues of BC Place and GM Place. The results of this work was provided to the ISU with valuable information for the development of appropriate security solutions and with appropriate knowledge for its negotiations with the City of Vancouver related to street closures.

Exercise Analysis Support: The MECSS project provided C2 analysis support for all of the major exercises leading up to V2010 (Exercises Pegasus Guardian 2, 2.2 and 3; Exercises Bronze, Silver and Gold; and the Exercise Laurel Wreath series). The results were used by planners to effect changes in the concepts of operations as well as the operating procedures.

Waterside Security: Studies were conducted of the Olympic Village site and other waterside venues to provide recommendations related to security of these venues.

Diver Detection: MECSS conducted an operational trial of the prototype diver detection system in Vancouver in cooperation with the CF.

Automatic Ship Identification Acquisition: MECSS deployed high resolutions cameras during V2010 as one element of the marine surveillance plan.

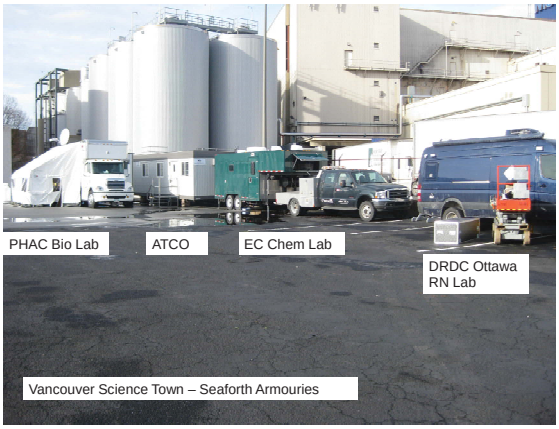
Human Factors for Vehicle Screening: MECSS conducted a study that resulted in advice to the physical security planners related to human factors issues that might affect the vehicle screeners. This advice was incorporated into training programs for the physical security team.

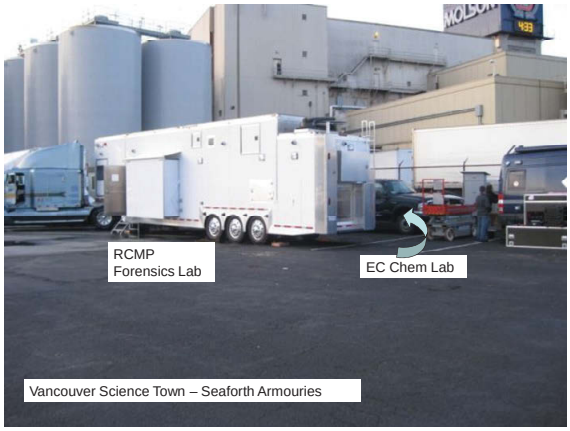
Force Protection Matrix Game: MECSS used this methodology to conduct three table top exercises for the Olympic Marine Operations Centre. The result of this work achieved great success in assisting them with improving their operational processes and was considered a best practice.

Annex D Science Town Photos

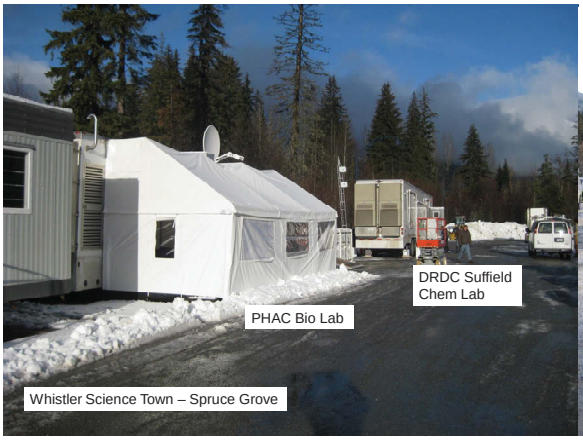
Photos by Major David Jones, DRDC CSS

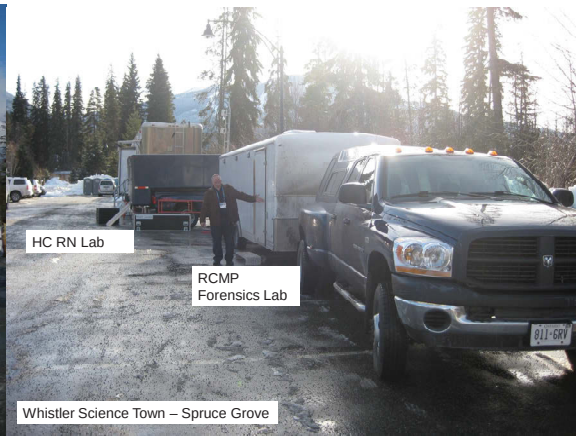
Vancouver Deployment





Whistler Deployment





G8 Deployment

G20 Deployment

Annex E MECSS Work Breakdown Structure

1. Project Management
    1.1. Travel
    1.2. Communications
    1.3. Report Publication
    1.4. Project Review
    1.5. Reach-back
2. CBRNE
    2.1. Federal CBRNE Inventory
    2.2. Provincial CBRNE Inventory
    2.3. Accommodation Vessel CBRNE Survey
    2.4. CBRNE Drills and Training
    2.5. Science Town Logistics
3. Command and Control (C2)
    3.1. IT Architecture Study
    3.2. ISU C2 CONOPS
    3.3. V2010 C2 Architecture and Process Modelling
    3.4. Vehicle Screening/Pedestrian Screening
    3.5. Collaboration Framework
    3.6. Human Factors for Screeners
    3.7. Command Centre Layout
    3.8. CIS Study for CF
4. Critical Infrastructure and Protection
    4.1. Underwater Explosion Threat

4.2. V2010 Infrastructure Dependencies

4.3. Blast Analysis

4.4. Critical Infrastructure Interdependency Modelling

4.5. I2Sim Development

5. Surveillance

5.1. Waterside Security of the Olympic Village

5.2. Patrol Boat Requirements Study

5.3. Diver Detection

5.4. Automated Ship Imagery Acquisition

6. Exercise Analysis

6.1. Pegasus Guardian Series

6.2. Force Protection Matrix Game Series

6.3. Ex Bronze

6.4. Ex Silver

6.5. Ex Gold

6.6. Ex Gold Live Play

6.7. Ex Mockasin

6.8. Ex Blue

6.9. Ex Ice

7. Major Event Framework

7.1. Strategic Framework

7.2. Technology Study

7.3. Prototype Development

8. G8/G20

8.1. Exercise Support

8.1.1. Ex Trillium Sentry

8.1.2. Ex Trillium Guardian

8.2. Shift Scheduling

8.3. Vehicle Screening/Pedestrian Screening

8.4. Marine Security

8.5. Lessons Learned

9. Conduct Phase

9.1. Winter Olympics

9.1.1. Pre-Deployment

9.1.2. Deployment

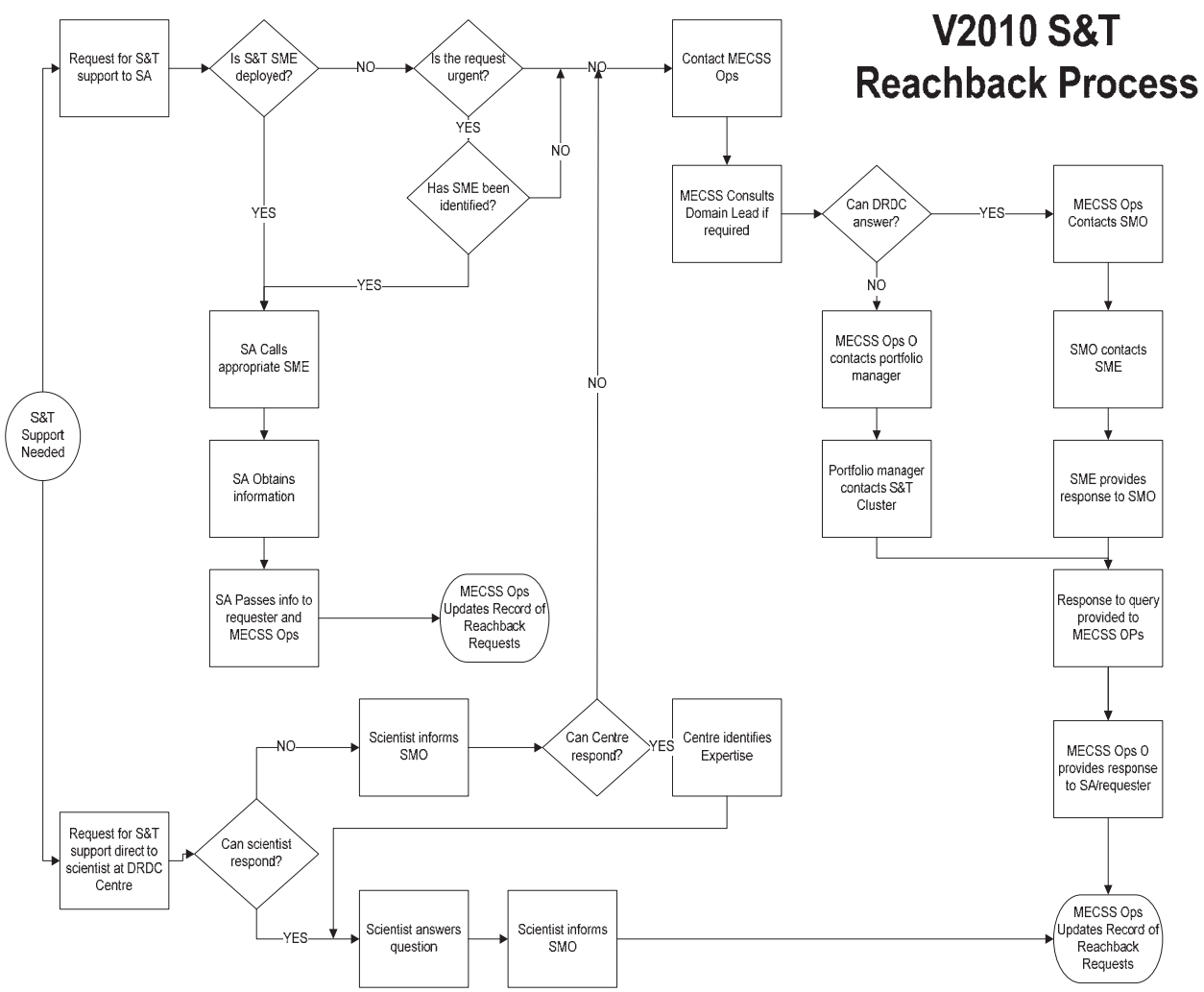
9.2. Paralympics

9.3. G8/G20

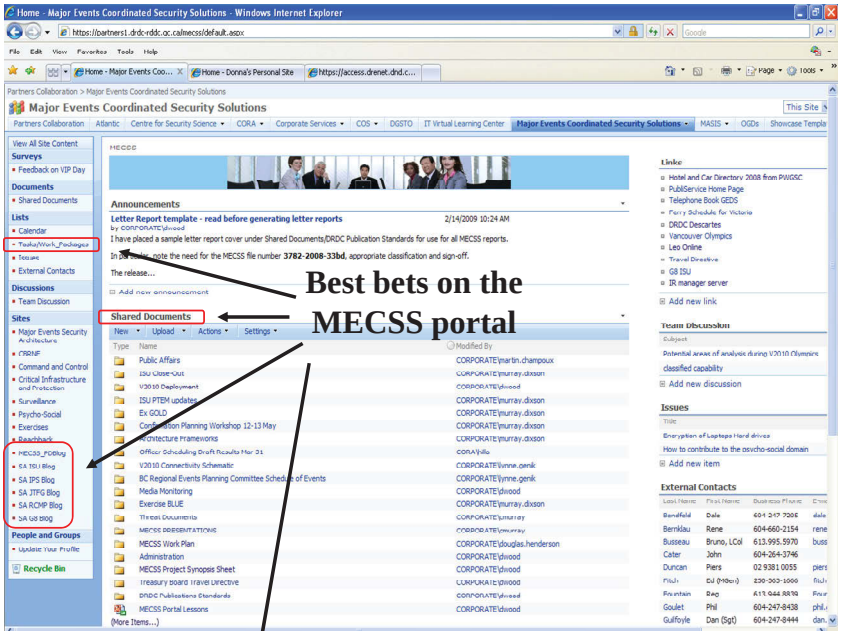
10. Closeout

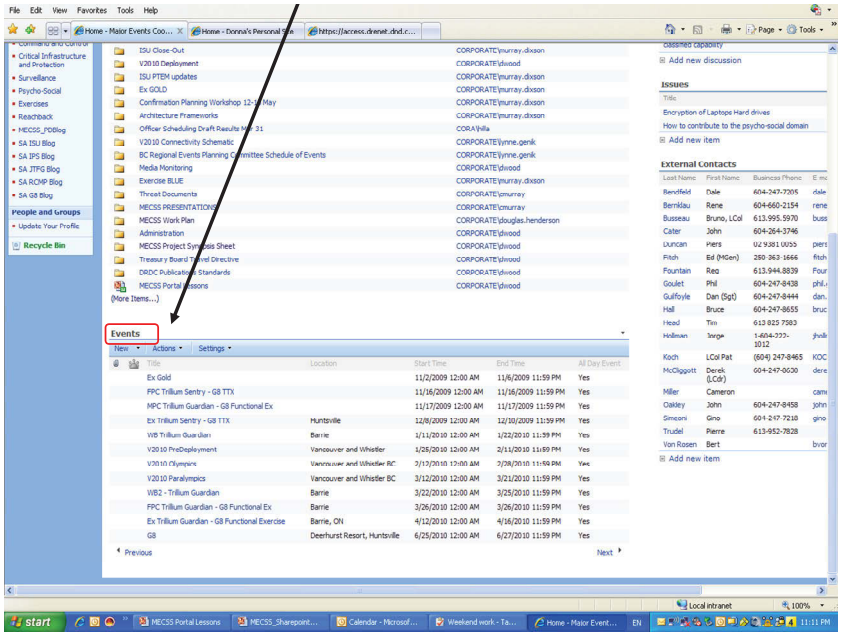
10.1. Lessons Learned

Annex F MECSS Reach-back Process for V2010



Annex G MECSS SharePoint® Portal Screen Shots





Annex H MECSS Project Risks

No.	Risk Factor	Prob	Impact	Mitigation Strategy
1	Insufficient time is available to address the breadth and depth of issues identified.	High	Med	*Resources have been focused on S&T support for V2010 and not on advance planning or resources for the G8/20. Prioritization will be critical to ensure scarce resources are tackling those issues where S&T can have the greatest impact. Where additional work would be valuable for the enduring Major Events Security Framework, gaps will be identified to the appropriate R&D program.*
2	Expectations are higher than S&T ability to deliver	High	High	*Mitigate: MECSS will commit to work only after a rigorous application of the Options Analysis Process is applied and there is a high level of confidence that the work can be completed within the timeframe and to the level of detail expected by the sponsors.*
3	Science is not mature enough to provide satisfactory solution	Med	Low	*Creative workarounds will be explored to the maximum possible. In some cases, S&T solutions may be fielded in-depth, i.e., as a redundant system to determine the maturity of the solution. The results of the MECSS project including outstanding gaps will be communicated to the appropriate S&T Program Managers within the federal S&T community including DRDC and CSS.*
4	Negative impact on Research, Technology, and Analysis (RTA) program	High	Med	*Mitigate: Where possible, the work will be distributed among a large number of S&T workers. This will have the effect of minimizing the impact on parallel RTA activities as well as maximizing the domain knowledge acquisition which in turn will have a positive impact on the future RTA program.* *Accept: In some cases, limited assets and/or facilities will need to be diverted to support operations. This decision will be taken only in consultation with the impacted Centre DG, the Chief Scientist and ADM(S&T). Sustainability after V2010 will be difficult and decision points will result.*

No.	Risk Factor	Prob	Impact	Mitigation Strategy
5	Lack of Governance impedes full cooperation of the federal S&T community	Med	Med	*Mitigate: In the absence of specific governance, S&T communities of practice serve to create the positive environment to encourage knowledge sharing and cooperation. Formal information sharing agreements or Service Level Agreements will have to be implemented where current structures are required but do not exist.*
6	Contract award delays	High	High	*Mitigate: Existing contract mechanisms will be exploited to the extent possible. Flexible contracts that pre-position access to industry will be developed if feasible. Urgent requirements may be dealt with under the appropriate authorities for the issuance of sole source contracts.*
7	Lack of Accommodations in Vancouver during Olympics	High	Med	*Mitigate: The V2010 ISU will be approached to factor in a certain number of spots for S&T workers. To the maximum extent possible, S&T workers will be located outside the geographic region of Vancouver with the ability to work in a distributed manner.*
8	Security classification	Med	High	*Mitigate: The V2010 and G8/20 ISUs can consistently work no higher than Protected B although LCol Koch does have a TITAN workstation. Classified material that must be transmitted electronically will be text only to minimize the impact of low bandwidth. All team members will have minimum of Secret clearances. PKI encryption will be the norm for the transmission of sensitive documents.*

List of acronyms

ADM S&T	Assistant Deputy Minister Science and Technology
BC	British Columbia
C2	Command and Control
C4ISR	Command, Control, Computer, Communications, Intelligence, Surveillance, Reconnaissance
CanadaCOM	Canada Command
CBRNE	Chemical, Biological, Radiological, Nuclear, Explosives
CERL	Canadian Explosives Research Laboratory
CF	Canadian Forces
CFEC	Canadian Forces Experimentation Centre
CI	Critical Infrastructure
CIS	Communication and Information Systems
CRTI	CBRNE Research Technology Initiative
CSS	Centre for Security Science
DND	Department of National Defence
DRDC	Defence Research & Development Canada
DRDKIM	Director Research and Development Knowledge and Information Management
DRP	Document Review Panel
EC	Environment Canada
EO	Exploitation Officer
FPMG	Force Protection Matrix Game
GM	General Motors
HC	Health Canada
IM	Information Management
IPS	Integrated Public Safety
ISU	Integrated Security Unit
IT	Information Technology
JTFG	Joint Task Force Games
LO	Liaison Officer
MECSS	Major Events Coordinated Security Solutions

MOU	Memorandum of Understanding
NRCan	Natural Resources Canada
OGD	Other Government Departments
PCO	Privy Council Office
PD	Project Director
PHAC	Public Health Agency of Canada
PL	Project Leader
PM	Project Manager
PMBOK	Project Management Body of Knowledge
PMI	Project Management Institute
PMP	Project Management Professional
PRM	Project Review Meeting
PSTP	Public Security Technical Program
PSA	Pedestrian Screening Area
RCMP	Royal Canadian Mounted Police
RTA	Research, Technology and Analysis
R&D	Research and Development
S&T	Science and Technology
SA	Scientific Advisor
SME	Subject Matter Expert
SMO	Senior Military Officer
SRB	Senior Review Board
TN	Technical Note
UK	United Kingdom
V2010	Vancouver 2010 Winter Olympic and Paralympic Games
VSA	Vehicle Screening Area
WBS	Work Breakdown Structure

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The Major Events Coordinated Security Solutions (MECSS) project was put in place to support the application of science and technology to reduce the security risk related to the Vancouver 2010 Winter Olympics and Paralympics as well as the G8/G20 Summits. At the direction of the Assistant Deputy Minister Science and Technology, the MECSS project was to be managed in the same manner as Technology Demonstration Projects using project management best practices. This report outlines the project management elements that were used to manage the MECSS project and specifically outlines the value of applying the Project Management Institute's Project Management Body of Knowledge to a science and technology project focusing on support to a domestic security event.

Le projet Solutions concertées pour la sécurité des grands événements (SCSGE) a été mis en place afin de soutenir l'utilisation de la science et de la technologie en vue d'atténuer les risques pour la sécurité des Jeux olympiques et paralympiques de Vancouver 2010 et des sommets du G8 et du G20. Les meilleures pratiques en matière de gestion de projet devaient servir à gérer, sous la direction du Sous-ministre adjoint (Science et technologie), le projet SCSGE de la même façon que les projets de démonstration de technologies. Ce rapport donne un aperçu des éléments de gestion de projet ayant été utilisés pour le projet SCSGE et il souligne tout particulièrement l'importance de l'ensemble des connaissances en gestion de projet du Project Management Institute dans le cadre d'un projet de science et technologie visant à appuyer un événement de sécurité nationale.

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Major Events Coordinated Security Solutions; V2010;G8;G20; project management; PMBOK